

Attorney Docket No. 06618-414001
Serial No. 09/496,137
Amendment dated March 24, 2004
Reply to Office Action dated December 24, 2003

Amendment to the Claims:

This listing of claims replaces all prior versions, and
listings, of claims in the application:

1. (Original) A method of producing a shape, comprising:
using a virtual reality environment in which positions of a
user's hand are tracked; and
forming a three-dimensional modeled surface by adding
shapes defined by hand movements at each of a plurality of
intervals.

2. (Currently amended) ~~A method as in claim 1~~ A method of
producing a shape, comprising:

using a virtual reality environment in which positions of a
user's hand are tracked;
↳ forming a three-dimensional modeled surface by adding
shapes defined by hand movements at each of a plurality of
intervals; and

↳ wherein an inside surface of the hand is used to form the
modeled surface, by tracking movement of a tangent to the hand,
to define a tangent plane of a surface being created.

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3. (Original) A method as in claim 2 wherein said using comprises tracking hand movement is tracked via a tracker and glove.

4. (Currently amended) A method as in claim 1 further comprising using an ~~incrementally~~ incremental technique to take an existing mesh of samples and changing it to add a new sample.

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5. (Currently amended) ~~A method as in claim 4~~ A method of producing a shape, comprising:

using a virtual reality environment in which positions of a user's hand are tracked;

forming a three-dimensional modeled surface by adding shapes defined by hand movements at each of a plurality of intervals;

using an incremental technique to take an existing mesh of samples and changing it to add a new sample; and

(D) wherein said technique comprises finding a neighborhood of samples, identifying a surface region, removing identified parts, and creating new parts to replace the identified parts, where the new parts take a new sample into account.

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6. (Currently amended) ~~A method as in claim 5 wherein said~~ A method as in claim 5 wherein said technique utilizes a projective plane to determine how the new parts should be formed.

7. (Currently amended) ~~A method as in claim 1~~ A method of producing a shape, comprising:

using a virtual reality environment in which positions of a user's hand are tracked;
forming a three-dimensional modeled surface by adding shapes defined by hand movements at each of a plurality of intervals;

wherein the surface is selected as a normal to the surface of the hand.

8. (Original) A method as in claim 1 further comprising defining a first hand position which defines a starting position and a second hand position which defines a stopping of drawing.

9. (Original) A method as in claim 1 further comprising defining a hand position which forms an eraser tool.

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10. (Original) A method as in claim 1 further comprising modifying the drawing using one of a plurality of props.

11. (Original) A method as in claim 10 wherein said props are tongs which can be squeezed and moved to rotate the shape.

12. (Original) A method as in claim 10 wherein said prop is a spherical ball.

13. (Original) A method as in claim 10 wherein said prop is a sponge which alters a look of the shape.

14. (Original) A method as in claim 13 wherein said altering is by smoothing.

15. (Original) A method of producing a shape, comprising: tracking a position of a user's hand; and forming a three-dimensional modeled surface based on said position of said user's hand at different times.

16. (Currently amended) A method as in claim 16 15, wherein said forming comprises using the hand to create 3d-strokes of shape.

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17. (Currently amended) A method as in claim ~~16~~ 15, wherein said using comprises using the bend of the hand to define the curvature of 3d-strokes.

18. (Currently amended) ~~A method as in claim 16, A method of producing a shape, comprising:~~

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tracking a position of a user's hand;
forming a three-dimensional modeled surface based on said position of said user's hand at different times;
wherein said forming comprises using the hand to create 3d-strokes of shape;

further comprising displaying a trace of the path of the hand,

sensing at least 7 of the hand's degrees of freedom for the purposes of shape creation, said degrees of freedom including the hand's position and orientation in space, along with degrees of freedom that are affected by the hand's posture.

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19. (Currently amended) ~~A method as in claim 16~~ A method
of producing a shape, comprising:

tracking a position of a user's hand;
forming a three-dimensional modeled surface based on said
position of said user's hand at different times;
wherein said forming comprises using the hand to create 3d-
strokes of shape; and
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further comprising merging samples from one hand position
to an existing shape.

20. (Currently amended) ~~A method as in claim 16~~ A method
of producing a shape, comprising:

tracking a position of a user's hand;
forming a three-dimensional modeled surface based on said
position of said user's hand at different times;
wherein said forming comprises using the hand to create 3d-
strokes of shape; and
wherein said samples are added by deprojecting a shape,
removing parts, adding new parts, and reprojecting said shape.

21. (Currently amended) A method as in claim 16 15
further comprising using hand postures to switch between
different modes of operation.

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22. (Currently amended) A method as in claim ~~16~~ 15
wherein a first hand posture comprises a start to track posture.

23. (Currently amended) A method as in claim ~~16~~ 15
wherein a second hand posture comprises a stop track posture.

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24. (Currently amended) A method as in claim ~~16~~ 15,
further comprising displaying different tools at the hand's
position based on different postures.

25. (Currently amended) A method as in claim ~~16~~ 15
further comprising using the finger to draw a narrower stroke.

26. (Original) A three dimensional drawing device,
comprising:

a hand tracking element, which tracks three dimensional
positions and hand shapes of an operator's hand in a virtual
reality environment in which positions of a user's hand are
tracked; and

forming a three-dimensional modeled surface by adding
shapes defined by hand movements at each of a plurality of
intervals.

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27. (Original) A shape drawing system, comprising:
a user interface which operates to command shapes to be
created; and
a processing element which incrementally adds surface
regions to an extant surface.

28. (Original) A system as in claim 27, wherein said user
interface tracks hand movements.

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29. (Original) A method of drawing on a computer,
comprising:
displaying a first shape on the computer;
using the hand to define a new shape, to be added to said
first shape;
using said new shape to apply deformations to said first
shape; and
displaying said first shape as deformed by said new shape.

30. (Currently amended) A method as in claim 29, wherein
a portion of the first shape moves toward the hand.

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31. (Original) A system of 3d shape-creation, comprising:
monitoring hand posture;
obtaining continuous variables that continuously vary
between a maximum value and a minimum value based on said hand
posture; and
using said variables to define a shape.

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